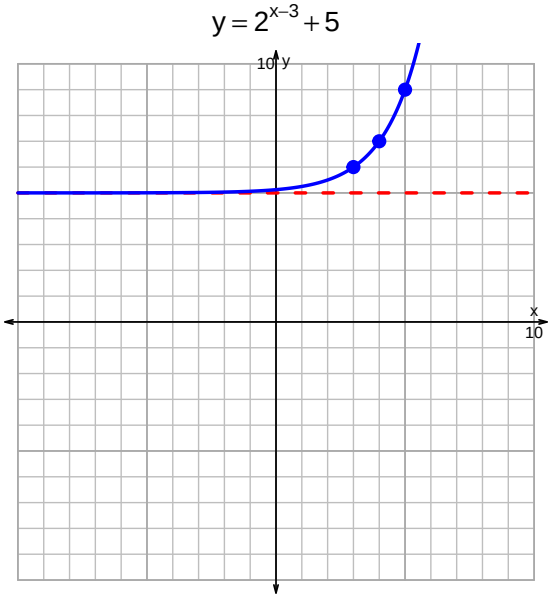
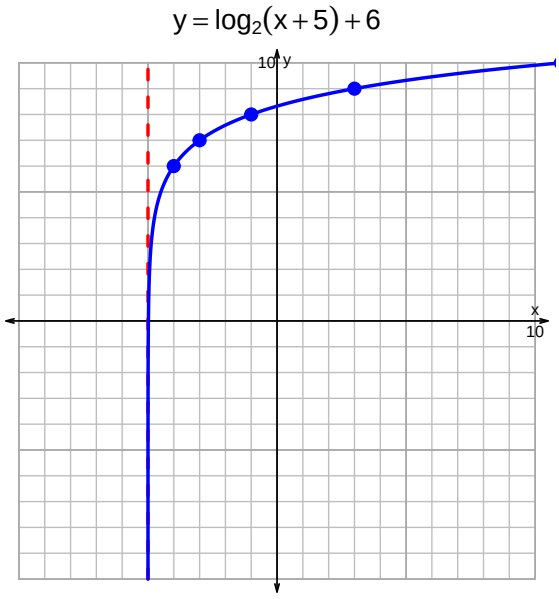
Name: Date:

S18QUIZ: EXP LOG (SLTN v249)

1. Graph $y = 2^{x-3} + 5$ and $y = \log_2(x+5) + 6$ on the grids below. Also, draw any asymptotes with dotted lines.





2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-17 = \left(\frac{-4}{5}\right) \cdot 2^{-7t/3}$$

Divide both sides by $\frac{-4}{5}$.

$$\frac{17 \cdot 5}{4} = 2^{-7t/3}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{17 \cdot 5}{4}\right) = \frac{-7t}{3}$$

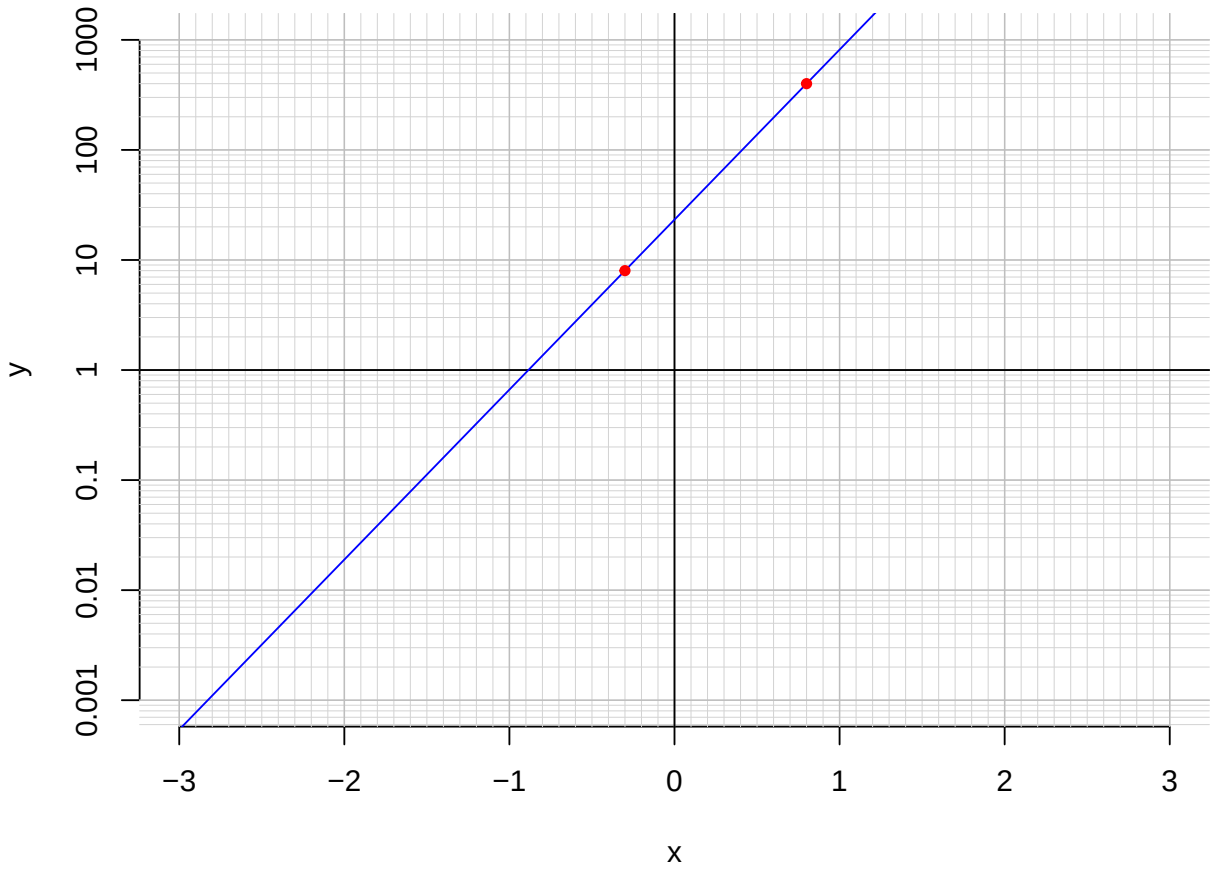
Divide both sides by $\frac{-7}{3}$.

$$\frac{-3}{7} \cdot \log_2\left(\frac{17 \cdot 5}{4}\right) = t$$

Switch sides.

$$t = \frac{-3}{7} \cdot \log_2\left(\frac{17 \cdot 5}{4}\right)$$

3. An exponential function $f(x) = 23.3 \cdot e^{3.56x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-0.3)$.

$$f(-0.3) = 8$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{3.56} \cdot \ln\left(\frac{x}{23.3}\right)$$

c. Using the plot above, evaluate $f^{-1}(400)$.

$$f^{-1}(400) = 0.8$$